PATENT
24GA5997 (8564-000043/US)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	William RUSSELL II et al.	Conf.:	9110
Appl. No.:	10/677,239	Group:	3714
Filed:	October 3, 2003	Examiner:	Kesha Frisby
For:	METHOD FOR PREDICTED REACTOR SIMULATION		
Docket No.:	24GA5997 (8564-000043/US)		

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314
Mail Stop Appeal Briefs - Patents

October 27, 2008

RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

Sir or Madam:

In response to the Notification of Non-Compliant Appeal Brief dated October 27, 2008, Applicants respectfully submit the following comments and a new "Summary of Claimed Subject Matter" section in accordance with MPEP § 1205.03(B).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

By: /Ryan Alley/
Ryan Alley, Reg. No. 60,977
P.O. Box 8910
Reston, VA 20195
(703) 668-8000

Enclosure: Replacement "Summary of Claimed Subject Matter" Section

GDY / REA : tlt

V. SUMMARY OF CLAIMED SUBJECT MATTER:

The following explains the subject matter set forth in each claim argued on appeal and each independent claim by way of example embodiments in the specification by page and line number, and in the drawings, if any, by reference characters only to satisfy 37 C.F.R. § 41.37(c)(1)(v). This concise explanation relies on example embodiments from the specification to describe the claims; however, the claims recite subject matter not limited to these example embodiments. Independent claims 1, 19, and 34 are representative and discussed below.

Claim 1

Example embodiments include methods of simulating nuclear reactor performance by using an existing response surface. A response surface is a polynomial correlation between independent control variables and dependent performance variables. The independent control variables, also called design inputs, represent operational controls that may be directly modified by the plant operators (for example, control rod positioning). The dependent performance variables, also called operational outputs, represent reactor parameters not directly set by plant operators (for example, critical power ratio or average core thermal power). The recitation in claim 1 of, "the response surface defining relationships between the design inputs and operational outputs of at least one or more aspects of a core design," read on this definition of a response surface and may be found in the specification as filed ("spec"), page 11, lines 20-31[1]. While the method of generating an existing response surface is not claimed, example methods discuss and enable response surface generation from a series of initial independent control variable inputs and conventional computer-implemented reactor simulations using these inputs at spec, page 9, line 31 through page 12, line 18.

A user may perform example methods by inputting values for independent control variables that were used in creating a response surface, as discussed above, as shown in Step S16 of Fig. 10. For example, a user may input numerical values for control rod position, core flow rate, and/or any other variable used in initially creating the response surface into a computer or other processing device. The computer or network, such as computer 922 shown in the network of FIG. 9, may store and/or access a corresponding existing response surface generated at any previous point in time, as shown in Steps S10 and S12 of FIG. 10. There are no limits on the user input; they are at a user's discretion and may reflect a current reactor's operational settings or be completely arbitrary. Accordingly, values in user input may be similar to or vastly different from the values for independent control variables used in creating the existing response surface. The recitation in claim 1 of, “receiving user input including values of one or more design input variables previously used in creating an existing response surface” read on this example embodiment step and may be found in the spec at page 26, line 5 through page 27, line 16.

---

[1] Note that the page and line numbering of the Specification as filed on October 3, 2003, which is cited herein, does not necessarily correspond to the pages and line numbering of the application as published.

Once the user has input the desired independent control variable values, the computer or other processing device may generate reactor performance variable values from the response surface combined with the input independent control variable values, as shown in Step S18 of FIG. 10. The computer may then display, print out, chart, or otherwise make available the generated reactor performance values in order to provide a reactor simulation, as shown in Step S22 of FIG. 10. For example, a processor may substitute the input values for control rod position, fuel location, etc., into the stored response surface polynomial to calculate corresponding dependent performance values for critical power ratio, electrical power generation, etc. The recitation in claim 1 of, “generating a reactor simulation based on the existing response surface for the core design and the received user input” read on this example embodiment step and may be found in the spec at page 27, line 16 through page 28, line 22.

Claim 19

Example methods may include a computer or network, such as computer 922 shown in the network of FIG. 9, accessing an existing response surface generated at any previous point in time, as shown in Steps S10 and S12 of FIG. 10. The recitation in claim 19 of, "identifying an existing response surface, the existing response surface defining relationships between design input and operational outputs of at least one or more aspects of a core design," read on this identification and definition of a response surface and may be found in the specification as filed ("spec"), page 11, lines 20-31.

Users may input several independent control variable values or sets thereof, and the network or other processing device may generate multiple sets of dependent performance values, which may be charted or otherwise compared to illustrate differences across several different inputs, as shown in Step S22 of FIG. 10. The recitation in claim 19 of, "inputting values of one or more of the design inputs; receiving one or more reactor simulation results for a reactor simulation of the existing response surface with the input values" read on this example method step and may be found in the spec at page 26, line 5 through page 28, line 22.

Claim 34

Example methods may include operating a nuclear reactor based on the real-time simulation results generated by an existing response surface and user input. For example, a reactor operator may input proposed operational changes as shown in step S16, such as control rod movement, and a networked processor may provide real-time simulated reactor response to such changes through the existing response surface as shown in Step S18 of FIG. 10. The recitation in claim 34 of, "the input including values of design input variables used in creating the existing response surface, the existing response surface defining relationships between the design input variables and operational outputs of at least one or more aspects of the core design" read on this example method step and may be found in the spec at page 26, line 5 through page 28, line 22.

The operator may then implement or otherwise operate the nuclear reactor in accordance with the input values and simulation results, without waiting for lengthy conventional simulation results. The recitation in claim 34 of, "operating a nuclear reactor using a reactor simulation generated based on an existing response surface for a core design and input received from a user" read on this example method step and may be found in the spec at page 28, lines 15-22.